

Claim Amendments

Claims 2 and 21-32 are cancelled without prejudice or disclaimer of the subject matter contained therein.

Please amend the claims as follows:

1. (Currently amended) A tunable Fabry-Perot filter, comprising:

2 a pair of opposed, at least partially reflective surfaces defining an optical cavity; and
a metal-oxide matrix having a multiplicity of holes therein in said cavity; and
4 a nano-dispersion of liquid crystals disposed in said holes in said metal-oxide matrix in
said matrix cavity.

2. (Cancelled).

3. (Currently amended) The filter according to claim 1, wherein said liquid

2 crystals are disposed in an array of holes in said a metal-oxide matrix.

4. (Currently amended) The filter according to claim 1, wherein said liquid

2 crystals are disposed in an array of holes in said a metal-oxide matrix, the metal-oxide being
taken from the group consisting of TiO₂, SiO₂ and ZrO₂.

5. (Original) The filter according to claim 3, wherein said metal-oxide matrix

2 is TiO₂.

6. (Currently amended) The filter according to claim 1, wherein said liquid crystals
2 are disposed in an irregular array of generally spherical holes in said a metal-oxide matrix.

7. (Original) The filter according to claim 6, wherein said holes are on the order
2 of about 10 to 50 nm in diameter.

8. (Original) The filter according to claim 6, wherein said holes make up at least
2 fifty percent of the volume of said matrix.

9. (Original) The filter according to claim 6, wherein said holes make up no
2 more than about sixty-eight percent of the volume of said matrix.

10. (Original) The filter according to claim 6, wherein said holes make up from
2 about fifty percent to about sixty-eighty percent of the volume of said matrix.

11. (Original) The filter according to claim 1, wherein said liquid crystals are in
2 droplet form, said droplets being smaller than the optical wavelengths to be passed through the
filter.

12. (Original) The filter according to claim 1, and further comprising means for
2 applying an electric field to said liquid crystals.

13. (Original) The filter according to claim 12, wherein the optical wavelengths
2 which the filter passes are tunable by varying the electric field applied across said optical cavity.

14. (Original) A tunable Fabry-Perot filter, comprising:
2 a pair of opposed, at least partially reflective, generally parallel surfaces defining
a cavity; and
4 a nano-dispersion of liquid crystals disposed in an array in a metal-oxide matrix
in said cavity.

15. (Original) The filter according to claim 14, wherein said liquid crystals are
2 disposed in an array of substantially spherical holes in said metal-oxide matrix.

16. (Original) The filter according to claim 14, wherein said holes are on the
2 order of about 10 to 50 nm in diameter and make up from about fifty percent to about sixty-eighty
percent of the volume of said matrix.

2 17. (Original) The filter according to claim 15, wherein said metal-oxide matrix
is formed of metal-oxides taken from the group consisting of TiO₂, SiO₂ and ZrO₂.

18. (Original) The filter according to claim 14, wherein said liquid crystals are
2 in droplet form, said droplets being smaller than the optical wavelengths to be passed through
the filter.

19. (Original) The filter according to claim 15, and further comprising means for
2 applying an electric field to said liquid crystals.

20. (Original) The filter according to claim 19, wherein the optical wavelengths
2 which the filter passes are tunable by varying the electric field applied across said cavity
containing said liquid crystals.

21 – 32 (Cancelled)

33. (New) The filter according to claim 1, wherein said liquid crystals
2 comprise 50-68 % of the total volume of said metal-oxide matrix in said cavity.

34. (New) A tunable Fabry-Perot filter comprising:
2 a pair of opposed, at least partially reflective, generally parallel surfaces defining a cavity
therebetween:
4 a metal-oxide matrix having an array of a multiplicity of holes therein in said cavity, said
metal-oxide matrix being formed by placing in a mold a mixture of polymer balls and metal-
6 oxide particles, heating the mold to drive off the polymer and fuse the metal-oxide into said
matrix defining an array of generally spherical voids; and
8 a nano-dispersion of liquid crystal material disposed in said array of voids in said metal-
oxide matrix in said cavity.